REMARKS

The Office Action dated October 5, 2009 has been received and carefully noted. The above amendments to the claims, and the following remarks, are submitted as a full and complete response thereto.

Claims 1, 10, 19, 25, 27, and 28 have been amended to more particularly point out and distinctly claim the subject matter of the invention. Claims 5 and 20 have been canceled without prejudice or disclaimer. No new matter has been added. Support for the claim amendments may be found at least in paragraph 0027 of the specification and in original claims 5 and 20. Claims 1, 2, 6-11, 14-19, 21-25, 27, and 28 are currently pending and are respectfully submitted for consideration.

Applicants thank the Examiner and her supervisor for the courtesies extended in conducting an interview on January 21, 2010.

Rejections under 35 U.S.C. § 112

Claims 1-28 were rejected under 35 U.S.C. §112, first paragraph, for allegedly failing to comply with the written description requirement. In particular, the Office Action took the position that the recitation "vary the **total** capacity" is not supported by the specification. Applicants submit that this rejection should be withdrawn for at least the following reasons.

As agreed upon during the interview, the amendments to the claims reciting "vary a total number of carriers in the cell" overcomes the rejection under §112. Accordingly, it is respectfully requested that this rejection be withdrawn.

Rejections under 35 U.S.C. § 103

Claims 1, 2, 5-11, 14-21, 23-25, 27, and 28 were rejected under 35 U.S.C. §103(a) as being unpatentable over Schilling (U.S. Patent NO. 6,128,328) in view of Otsuka (U.S. Patent No. 6,741,859). This rejection is respectfully traversed for at least the following reasons.

Claim 1, upon which claims 2, 5-9, and 23 are dependent, recites an apparatus. The apparatus includes a defining unit configured to define a capacity layer for a cell of a communications system. The cell includes a coverage layer having a fixed coverage area provided by at least one carrier. The capacity layer includes at least one carrier, each carrier in the capacity layer having a dynamically variable coverage area. The defining unit is configured to vary the number of carriers in the capacity layer, to dynamically vary a total number of carriers in the cell. A power level of the at least one carrier in the capacity layer is variable such that the power level of the at least one carrier can be varied in dependence upon a distance of an associated mobile station from the base station.

Claim 10, upon which claims 11, 14-18, and 24 are dependent, recites a method. The method includes defining, by a station, a capacity layer for a cell of a communications system. The cell includes a coverage layer having a fixed coverage area

provided by at least one carrier. The capacity layer comprising at least one carrier, each carrier in the capacity layer having a dynamically variable coverage area. The method includes varying, by the station, the number of carriers in the capacity layer, to dynamically vary a total number of carriers in the cell. A power level of the at least one carrier in the capacity layer is variable such that the power level of the at least one carrier can be varied in dependence upon a distance of an associated mobile station from the base station.

Claim 19, upon which claims 20, 21, 23, and 24 are dependent, recites an apparatus. The apparatus includes at least one transmitter configured to transmit a first carrier at a predetermined power level thereby defining a fixed coverage area of a cell of a communications system. The at least one transmitter is further configured to transmit a variable number of further carriers to define, at least in part, a dynamically variable total number of carriers in the cell, wherein each of the further carriers has a dynamically variable coverage area. Power levels of the further carriers depend upon a proximity of a mobile station associated with a carrier to a base station.

Claim 25 recites an apparatus. The apparatus includes a defining means for defining a capacity layer for a cell of a communications system. The cell includes a coverage layer having a fixed coverage area provided by at least one carrier. The capacity layer includes at least one carrier. Each carrier in the capacity layer having a dynamically variable coverage area. The apparatus includes a means for varying the number of carriers in the capacity layer, to dynamically vary a total number of carriers in

the cell. A power level of the at least one carrier in the capacity layer is variable such that the power level of the at least one carrier can be varied in dependence upon a distance of an associated mobile station from the base station.

Claim 27 recites an apparatus. The apparatus includes a first carrier transmitting means for transmitting a first carrier at a predetermined power level thereby defining a fixed coverage area of a cell of a communications system. The apparatus includes a variable number transmitting means for transmitting a variable number of further carriers to define, at least in part, a dynamically variable total number of carriers in the cell, wherein each of the further carriers has a dynamically variable coverage area. Power levels of the further carriers depend upon a proximity of a mobile station associated with a carrier to a base station.

Claim 28 recites a cellular communication system including at least one cell. The cell includes a station configured to provide a coverage layer having a fixed coverage area. The station is also configured to provide a capacity layer comprising at least one carrier, said at least one carrier having a dynamically variable coverage area. The station is also configured to vary the number of carriers in the capacity layer to dynamically vary the total number of carriers in the cell. A power level of the at least one carrier in the capacity layer is variable such that the power level of the at least one carrier can be varied in dependence upon a distance of an associated mobile station from the base station.

As will be discussed below, Applicants respectfully submit that the combination of Shilling and Otsuka fails to disclose, either expressly or implicitly, all of the elements of

the claims, and therefore fails to provide the advantages and features discussed above.

Schilling discusses frequency hopping code division multiple access system and method. Specifically, Schilling discusses maximizing channel capacity, i.e., having the optimum number of users per cell, of a frequency hopping, code division multiple access cellular communication system. (Schilling, column 3, lines 10-14).

Otsuka et al. discusses a code division multiple access mobile communication system accommodating increased number of mobile stations. Specifically, Otsuka et al. refers to hand-off methods between base stations, i.e., inter-base station co-operation rather than intra-base station coverage. (Otsuka et al., column 2, line 5). According to Otsuka et al., a hard handoff requires a greater power than a soft handoff. (Otsuka et al., column 2, lines 34-36). Therefore, when the mobile station is around a border of cells, a soft hand-off is suitable, because the soft hand-off requires only a minimum transmission power for the mobile station to achieve communication with the closest base station.

Applicants respectfully submit that the combination of Shilling and Otsuka fails to disclose or suggest all of the elements of the present claims. For example, the combination of Shilling and Otsuka does not disclose or suggest, at least, "wherein a power level of the at least one carrier in the capacity layer is variable such that the power level of the at least one carrier can be varied in dependence upon a distance of an associated mobile station from the base station," as recited in claims 1, 10, 25, and 28. Similarly, the combination of Shilling and Otsuka fails to disclose or suggest, "wherein power levels of the further carriers depend upon a proximity of a mobile station

associated with a carrier to a base station," as recited in claims 19 and 27. The Office Action took the position that Shilling discloses these elements of the claims (see Office Action, page 4). Applicants, however, respectfully disagree with this conclusion for the following reasons.

According to embodiments of the present invention, the capacity layer allows carriers to be added or removed from the cell, thereby varying the capacity of the cell. In particular, the capacity layer is associated with carriers with which the power level may be varied, such that the range of such carriers may vary. That is, the power level of a carrier signal may vary in dependence upon the distance of an associated mobile station from the base transceiver station. If a mobile station is close to the base transceiver station, then a relatively low power is required to communicate with the mobile station. If the mobile station is closer to the edge of the cell, then a relatively high power is required to communicate with the mobile station. Thus, the power associated with each individual carrier may be varied in dependence upon information relating to the position of the mobile station. (Specification, paragraph 0027).

Shilling and Otsuka, however, fail to teach or suggest that a power level of the at least one carrier in the capacity layer is variable such that the power level of the at least one carrier can be varied in dependence upon a distance of an associated mobile station from the base station. Shilling, which was cited by the Office Action as disclosing this limitation, merely discloses a forward power control which is the adjustment of the power transmitted by the base station to achieve a fixed receive power at the remote unit. Thus,

although Shilling appears to disclose adjusting the power transmitted by a base station, Shilling does not disclose that the power level of the carrier in the capacity layer can be varied based on a distance of an associated mobile station from the base station. Otsuka fails to cure this deficiency in Shilling.

Therefore, Applicants respectfully submit that the combination of Shilling and Otsuka fails to disclose or suggest, at least, "wherein a power level of the at least one carrier in the capacity layer is variable such that the power level of the at least one carrier can be varied in dependence upon a distance of an associated mobile station from the base station," as recited in claims 1, 10, 25, and 28. Similarly, the combination of Shilling and Otsuka fails to disclose or suggest, "wherein power levels of the further carriers depend upon a proximity of a mobile station associated with a carrier to a base station," as recited in claims 19 and 27.

Dependent claims 2, 6-9, 11, 15-18, 21, 23, and 24 inherit the patentable features of their respective base claims by virtue of their dependency. Therefore, Applicant respectfully requests that the rejection of dependent claims 2, 5-9, 11, 15-18, 20, 21, 23, and 24 be withdrawn and these claims be allowed for at leas the same and/or similar reasons as their respective base claims, and for the specific limitations recited therein.

Claim 22 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Schilling and Otsuka et al. in view of Lawrence (U.S. Patent Publication No. 2004/0203837). Particularly, the Office Action asserted that the combination of

Schilling, Otsuka and Lawrence disclosed all of the elements of claim 22. However, this rejection is respectfully traversed for at least the following reasons.

Schilling and Otsuka et al. are discussed above. Lawrence discusses opportunistic channel assignments. Specifically, Lawrence discusses that variable power levels allows cells to be sized according to the subscriber density and demand within a particular region. (Lawrence, paragraph [0002]). In other words, Lawrence discusses the behavior of CDMA/UMTS cells, which shrink in size when the traffic grows within it due to the self interference of CDMA/UMTS technology.

However, nothing was found or cited in Lawrence that cure the deficiencies of Schilling and Otsuka et al. For example, Lawrence fails to disclose, either expressly or implicitly, at least, "wherein power levels of the further carriers depend upon a proximity of a mobile station associated with a carrier to a base station," as recited in claim 19.

Claim 22 depends upon claim 19 and, therefore, inherits the patentable features of thereof. Accordingly, Applicant respectfully requests that the rejection of dependent claim 22 be withdrawn and this claim be allowed for at leas the same and/or similar reasons as base claim 19, and for the specific limitations recited therein.

Claims 1, 10, 19, 25, 27, and 28 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Schilling in view of Mujtaba (U.S. Patent No. 6,950,678). Particularly, the Office Action asserted that the combination of Schilling and Mujtaba disclosed all of the elements of claims 1, 10, 19, 25, 27, and 28. However, this rejection is respectfully traversed for at least the following reasons.

Schilling is discussed above. Mujtaba discusses a control technique for a communication system. Specifically, Mujtaba discusses inserting microcells into macro cells at hotspot. (Mujtaba, Abstract). The microcells are co-located with the macro cells. The microcells use steerable antenna beams to cover hot spots, which can vary with time. Mujtaba discusses that filter tap weights may be adjusted to point the beam to any desired location in the macro cell so the microcell can track the hot spot. (Mujtaba, Fig. 5a).

However, nothing was found in Mujtaba to cure the above-mentioned deficiencies of Schilling. For example, Mujtaba fails to disclose, either expressly or implicitly, at least, "wherein a power level of the at least one carrier in the capacity layer is variable such that the power level of the at least one carrier can be varied in dependence upon a distance of an associated mobile station from the base station," as recited in claim 1. Because Mujtaba fails to disclose, either expressly or implicitly, at least, the above-quoted features of claim 1, Applicant respectfully submits that the entire combination of Schilling and Mujtaba is deficient. Therefore, Applicant respectfully requests that the rejection of independent claim 1 be withdrawn and this claim be allowed for at least the reasons presented above.

Independent claims 10, 19, 25, 27, and 28, which each have their own scope, recite features similar to those recited in claim 1. Accordingly, Applicant respectfully requests that the rejection of independent claims 10, 19, 25, 27, and 28 be withdrawn and these claims be allowed for reasons similar to those discussed above with respect to claim 1.

Applicants respectfully submit that the cited prior art fails to disclose or suggest all of the elements of the claimed invention. These distinctions are more than sufficient to render the claimed invention unanticipated and unobvious. It is therefore respectfully requested that all of claims 1, 2, 6-11, 14-19, 21-25, 27, and 28 be allowed, and this application passed to issue.

If for any reason the Examiner determines that the application is not now in condition for allowance, it is respectfully requested that the Examiner contact, by telephone, the applicant's undersigned attorney at the indicated telephone number to arrange for an interview to expedite the disposition of this application.

In the event this paper is not being timely filed, the applicant respectfully petitions for an appropriate extension of time. Any fees for such an extension together with any additional fees may be charged to Counsel's Deposit Account 50-2222.

Respectfully submitted,

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